

REMARKS

Reexamination and reconsideration of the subject matter identified in caption, pursuant to and consistent with 37 C.F.R. § 1.116 and in light of the remarks which follow are respectfully requested.

At the outset, the undersigned notes with appreciation the indication of allowable subject matter in claims 8 and 9.

Claims 1-10 are pending in the application and are under consideration, as claims 11-20 stand withdrawn from consideration.

A Replacement Sheet of Fig. 1 is filed herewith for the reasons discussed below. It is submitted that no new matter has been introduced.

Turning to the Official Action, the drawings stand objected to for the reasons set forth at page 2 of the Official Action. This rejection is believed to be obviated by the attached Replacement Drawing. In particular, the schematic figure has been re-drawn to more clearly show the notches (10) of the sputter target (4) fitting inside flanges (8) of backing plate (6). Thus, withdrawal of this objection is respectfully requested.

Thus, withdrawal of this objection is in order, and it is respectfully requested.

Claims 1-3 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Qamar et al. (U.S. Patent No. 5,009,765); and Claims 4-7 stand rejected under §103(a) as allegedly being obvious over Qamar et al. These rejections are traversed for the following reasons.

The present invention relates to a method of bonding a sputter target to a backing plate, and more specifically, the use of a backing plate having at least two spaced-apart peripheral flange segments on the bonding surface of the backing plate so that the flange segments provide a centering for the sputter target and also provide a uniform spacing between the target and backing plate to accommodate a uniform solder bonded interface.

In one aspect of the invention, and as set forth in claim 1, a method for forming a solder bonded sputter target/backing plate assembly is provided. The method includes (a) forming a backing plate with a bonding surface having at least two spaced-apart peripheral flanged segments disposed on the bonding

surface of the backing plate; (b) forming a sputter target having a sputter surface and at least two peripheral notched segments on the bonding surface and the notched segments adapted for aligning with the flange segments; (c) applying a solder material to the interface spacing defined by superimposing and aligning the sputter target on the backing plate and the flange segments having a height thickness larger than the depth thickness of the notched segments; and (d) allowing the solder material to solidify and bond the sputter target to the backing plate.

Qamar et al. relates to a sputter target and backing plate assembly capable of withstanding high sputtering power levels. Col. 1, lines 5-9.

The Official Action states that "Applicant argues Qamar does not disclose 'applying a solder material to the interface spacing' as required by claim 1." Official Action at page 6. This is not the thrust of Applicants' contention. In fact, Applicants acknowledge the use of solder materials to bond targets to backing plates. However, Qamar et al. does not disclose or suggest creating a bond plane to maintain uniform solder thickness throughout the bond interface. In fact, Qamar et al. does not fairly disclose or suggest applying a solder material to the interface spacing by superimposing and aligning the target and the backing plate, wherein the uniform thickness assembly is achieved. In this regard, it is advantageous to maintain thickness uniformity as it has a direct impact on the uniformity of the sputtered film.

Qamar et al., on the other hand, does not even relate the interface of the sputter target and the backing plate, or the uniformity of the bond thickness between the target and the backing plate. In contrast, Qamar et al. disclosed welding the peripheral sections of the target assembly to maintain the vacuum integrity during use in a sputter chamber and direct cooling of the target. In this regard Qamar et al. states:

A beveled edge 14 is continuous between the reduced diameter section 16 and the primary diameter 24. As shown in FIG. 2, the lower portion of the sputter target 10 includes a recess 28, formed by a peripheral ring 18 having an inner diameter 26 and a cooling surface 22 disposed on the back (lower side) of upper planar surface 12. Col. 3, lines 36-40. (Emphasis added.)

[A] backing member is shown generally at 40 and is defined by an annular ring 58 having an outer diameter 50 matching the outer diameter 24 of the target 10, and an inner diameter 52. As shown in FIG. 2, the backing plate 40 includes an upper mounting section 42 having an inner enlarged diameter section 46 defining an upwardly facing shoulder 48, and having an outwardly beveled surface 44. Col. 3, lines 41-52. (Emphasis added.)

Clearly Qamar describes a sputter target assembly where the V-shaped periphery of the target and the backing plate are connected. Moreover, the inner part of the target and backing plate forms a cooling channel. Therefore, Qamar et al. is very different from the present invention where the alignment and uniform bond between the target and the backing plate are concerned. Specifically, Qamar et al. does not provide continuous contact between the target and the backing plate, much less two planar surfaces which maintain a uniformly thick solder therebetween. Thus, withdrawal of the rejections is in order and it is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper, or the application in general, the Examiner is invited to telephone the undersigned at his or her earliest convenience.

If the Examiner has any questions or concerns regarding this Amendment or the application in general, he is invited to contact the undersigned at his earliest convenience.

Respectfully submitted,



Iurie A. Schwartz
Attorney for Applicants
Reg. No. 43,909

Praxair, Inc.
Corporate Law Department
39 Old Ridgebury Road
Danbury, CT 06810
Phone: (203) 837-2115

Date: April 19, 2006